MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2015/2016

TAT 3131 – AGENT TECHNOLOGY

(All sections / Groups)

8 October 2015
9:00am – 11:00am
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This Question paper consists of **FOUR pages**, which includes the front cover, with **FIVE Questions** only.
2. Attempt **FOUR** out of **FIVE** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please print all your answers in the answer booklet provided, and start each question on a new page.

Question 1 [10 marks]

(a) The field of multiagent systems is the integration of many disciplinary studies, which include logic, social sciences, game theory, economy, philosophy, ecology and etc. Many viewpoints have been drawn to comment on multiagent systems. For examples:
(i) Agents are a paradigm for software engineering.
(ii) Agents are just all about artificial intelligence.
Clarify these two viewpoints.

[4 marks]

(b) Explain the following properties of a task environment:
(i) Fully accessible
(ii) Fully deterministic

[2 marks]

(c) What is an *agent with state*? Explain the structure of this agent using a figure.

[4 marks]

Question 2 [10 marks]

(a) Describe the difference between theoretical reasoning and practical reasoning.

[2 marks]

(b) List four features of *intentions* of a practical-reasoning agent.

[4 marks]

(c) In the STRIPS planner, an action is described in four components: a *name*, a *pre-condition list*, a *delete list* and an *add list*. In the Blocks World problem, one of the operations is the *stack* action.

The *stack* action occurs when the robot arm places the object x it is holding is placed on top of object y.

Write the above *stack* action in the STRIPS language.

[4 marks]

Continued.....

Question 3 [10 marks]

(a) What are the two programs used to create a situated automata? Explain each program.
[2 marks]

(b) State two strengths and two limitations of the reactive agents.
[2 marks]

(c) The TOURINGMACHINES architecture is an example of the hybrid architecture.
(i) What is the hybrid architecture? [2 marks]
(ii) Draw the architecture of TOURINGMACHINES [1 mark]
(iii) Explain the functionality of each of the three control layers in the TOURINGMACHINES architecture.
[3 marks]

Question 4 [10 marks]

(a) Explain the following terms:
(i) English auction
[2 marks]
(ii) First-price sealed-bid auction
[2 marks]

(b) (i) What is *negotiation*?
[2 marks]
(ii) State and explain four components of a negotiation setting.
[4 marks]

Continued.....

Question 5 [10 marks]

(a) Explain the benefits of a multiagent system from the viewpoint of:
(i) Modularity
(ii) Efficiency

[3 marks]

(b) Searle (1969) identified various different types of speech act, which include *representative*, *directives*, *commisives*, *expressive*, and *declarations*. For each statement below, identify a type of speech act.
(i) Is the door opened?
(ii) I promise to open the door.
(iii) Please open the door.
(iv) Thank you for opening the door.

[2 marks]

(c)
(i) Define *coordination*.

[1 mark]

(ii) What is the *Contract Net*?

[1 mark]

(iii) What are the three requirements for using the *Contract Net*?

[3 marks]

End of Paper